

**DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM**

Fact Sheet

| | |
|-----------------------|---|
| Permittee: | City of Harlowton |
| Permit No.: | MT0020354 |
| Receiving Water: | Musselshell River |
| Facility Information: | Harlowton Wastewater Treatment Facility |
| Mailing Address: | P.O. Box 292 Harlowton, MT 59036 |
| County: | Wheatland |
| Contact: | Bob Schuchard, Public Works Director |
| Fee Information: | |
| Type: | Minor Publicly Owned Treatment Works |
| Number of Outfalls: | 1 (for fee determination purposes) |
| Type of Outfall: | 001 – Facility Discharge |

I. Permit Status

The Montana Pollutant Discharge Elimination System (MPDES) permit for the City of Harlowton (City or Harlowton) Wastewater Treatment Facility (WWTF) was issued on September 1, 2017. The Department of Environmental Quality (DEQ) received a complete permit renewal application from the City on March 1, 2022, and administratively extended the permit by letter dated March 21, 2022. The administratively extended permit is referenced in this Fact Sheet (FS) as the 2017-issued permit.

II. Facility Information

Current Facilities:

The Harlowton WWTF serves the City of Harlowton, with a current population of approximately 931 people. The existing WWTF is a three cell aerated lagoon with a total volume of 8.37 million gallons constructed in 1998. The final cell is aerated in the front one third and the back two thirds is a quiescent zone. The design flow of the facility is 0.22 million gallons per day (mgd).

Discharge from the facility is continuous. Effluent is discharged from a pipe to the Musselshell River (Musselshell) at approximately 46°25'31" N latitude, 109°47'59" W longitude. The facility provides disinfection of the effluent by chlorination.

| Table 1: Current Design Criteria Summary* – City of Harlowton WWTF | |
|---|---|
| Facility Description: Three-cell Aerated Lagoon with Effluent Disinfection | |
| Construction Date: 1998 | Modification Date: NA |
| Design Population: 1,372 | Current Population: 931 |
| Design Flow, Average: 0.22 mgd | Design Flow, Maximum Day: 0.61 mgd |
| Aerated Cells: 2.79 million gallons (each) | Third Cell: 1/3 Aerated, 2/3 Quiescent |
| Number Aerated Cells: 3 | Detention Time @ Design Flow: 30.9 days |
| Design BOD Load: 274 lb/day | Design TSS Load: 302 lb/day |
| Collection System: Separate | |
| Disinfection: Yes | Type: UV |
| Discharge Method: Continuous | |

*Information from "As Built" plans, MSE-HKM, Inc., March 1999.

Effluent data are summarized in Table 2. These data are based on the discharge monitoring reports (DMR) submitted by the City for the discharge from the Harlowton WWTF for the period of record (POR) July 2017 through June 2022. In this FS, mg/L means milligrams per liter, µg/L means micrograms per liter, cfu/100ml means colony forming units per 100 milliliters and s.u. means standard units.

Table 2: Effluent Characteristics for the Period July 2017 through June 2022

| Parameter | Units | Previous Permit Limits | Minimum | Maximum | Average | Number of Samples |
|---|-----------|--|-------------------|---------|---------|-------------------|
| Flow, Daily Average | mgd | - | 0.05 | 0.7 | 0.09 | 60 |
| Biochemical Oxygen Demand ⁽¹⁾ | mg/L | 30/45 | ND ⁽⁴⁾ | 37.0 | 12.3 | 58 |
| Total Suspended Solids ⁽¹⁾ | mg/L | 45/65 | ND ⁽⁴⁾ | 46.0 | 13.3 | 54 |
| pH ⁽²⁾ | s.u. | 6.0 – 9.0 | 7.7 | 10.2 | 8.6 | 60 |
| <i>Escherichia coli</i> | cfu/100ml | 126/252 ^(1,2) 630/1,260 ^(1,3) | 1 | 12,033 | 397 | 55 |
| Oil & Grease | mg/L | - | ND ⁽⁴⁾ | 1 | 1 | 9 |
| Chlorine, Total Residual | mg/L | 0.01/0.02 ⁽⁵⁾ | ND ⁽⁴⁾ | 0.39 | 0.2 | 35 |
| Ammonia, as N | mg/L | - | 0.12 | 33.2 | 11.7 | 60 |
| Kjeldahl Nitrogen, as N | mg/L | - | 3.6 | 29.3 | 9.6 | 15 |
| Nitrate + Nitrite, as N | mg/L | - | 0.03 | 9.08 | 2.3 | 60 |
| Total Nitrogen, as N | mg/L | - | 0.5 | 26.4 | 13.6 | 56 |
| Total Phosphorus, as P | mg/L | - | 1.78 | 4.7 | 3.0 | 14 |
| Footnotes: 1. 30-day average/7-day average 2. Geometric mean rather than average for <i>E. coli</i> . Limits effective April 1 through October 31. 3. Geometric mean rather than average for <i>E. coli</i> . Limits effective November 1 through March 31. 4. ND is not detected at laboratory reporting levels. 5. 30-day average/maximum daily. Measurement of 0.1 mg/L or below is considered in compliance with limits. | | | | | | |

III. Technology-based Effluent Limits

a. Applicability to Technology-based Limits

The Montana Board of Environmental Review adopted minimum treatment requirements for secondary treatment, or the equivalent, for publicly owned treatment works (POTW). Secondary treatment is defined in terms of effluent quality as measured by BOD₅, TSS, percent removal of BOD₅ and TSS, and pH.

These requirements may be modified on a case-by-case basis for facilities that are eligible for treatment equivalent to secondary treatment (TES) or alternative state requirements (ASR) for TSS as provided for in 40 CFR 133.105. To determine if a facility is eligible for TES the facility must meet the requirements of 40 CFR 133.101(g) summarized as follows:

- 1) The BOD₅ and TSS effluent concentrations consistently achievable through proper operation and maintenance of the treatment works exceed the minimum effluent quality described for secondary treatment in 40 CFR 133.102,
- 2) The treatment works utilize a trickling filter or waste stabilization pond, and
- 3) The treatment works utilize biological treatment that consistently achieves a 30-day average of at least 65% removal.

A properly designed and operated aerated lagoon system is capable of meeting the national secondary treatment standards (NSS) for BOD₅ on a consistent basis and TES effluent limits for TSS. Proposed Technology-based Effluent Limits (TBELs) are shown in Table 3. The BOD₅ limit is NSS and includes a requirement for 85% removal. The pH limit is NSS. The TSS limit is TES for lagoons (including aerated lagoons) with a requirement for 65% removal. Mass limits for both BOD₅ and TSS are based on design flow.

Mass Limit Calculations:

Load (lb/day) = Design Flow (mgd) x Concentration Limit (mg/L) x 8.34 lb/gal

BOD₅: 30-day Ave: Load = (0.22)(30)(8.34) = 55.0 lb/day
 7-day Ave: Load = (0.22)(45)(8.34) = 82.6 lb/day

TSS: 30-day Ave: Load = (0.22)(45)(8.34) = 82.6 lb/day
 7-day Ave: Load = (0.22)(65)(8.34) = 119.3 lb/day

b.

| Table 3: Technology-based Effluent Limits | | | |
|---|-----------|-------------------------|---------------|
| Parameter | Units | 30-Day Average | 7-Day Average |
| BOD ₅ | mg/L | 30 | 45 |
| | lb/day | 55.0 | 82.6 |
| | % removal | 85% | - |
| TSS | mg/L | 45 | 65 |
| | lb/day | 82.6 | 119.3 |
| | % removal | 65% | - |
| pH | s.u. | 6.0-9.0 (instantaneous) | |

Nondegradation Allocated Loads

Nondegradation allocated loads for the Harlowton WWTF were determined for BOD₅ and TSS under a previous permitting action and documented in a Statement of Basis (SOB) dated September 27, 1994.

Table 4 summarizes the nondegradation allocated loads and the actual calculated average loads discharged from the WWTF from July 2017 through June 2022. The data indicate that the facility did not exceed the nondegradation allocated loads for BOD₅ and TSS.

| Table 4: Comparison of Allocated Nondegradation Loads & Actual Loads | | | | | | | |
|--|-----------------|---------------------------|------|------|------|------|------|
| Parameter | Allocated Load* | Actual Load** (lb/day) | | | | | |
| | (lb/day) | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| BOD ₅ | 102 | 6.5 | 9.7 | 13.3 | 7.4 | 15.1 | 22.8 |
| TSS | 250 | 3.4 | 10.6 | 14.0 | 11.1 | 41.3 | 26.5 |

*Original allocated loads from SOB dated 9/27/94.

**Actual loads are based on annual averages of the monthly values reported on DMRs.

IV. Water Quality-based Effluent Limits

a. Scope and Authority

Permits are required to include water quality-based effluent limits (WQBELs) when TBELs are not adequate to prevent excursions of state water quality standards. No wastes may be discharged that can reasonably be expected to violate any state water quality standards. Montana water quality standards define both water use classifications for all state waters and numeric and narrative standards that protect those designated uses.

b. Receiving Water

The Harlowton WWTF discharges treated effluent to the Musselshell. The reach of the Musselshell that receives the Harlowton WWTF discharge is classified as B-2 according to Montana Water Use Classifications. Waters classified B-2 are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply.

The Musselshell where it receives the discharge from the Harlowton WWTF is located within the Upper Musselshell watershed identified as United States Geological Survey (USGS) Hydrological Unit Code (HUC) 10040201 and Montana assessment unit MT40A001_010. This assessment unit is listed as impaired on the 2020 303(d) list. The probable impaired uses are primary contact recreation and aquatic life. The probable causes for impairment are alterations in streamside or littoral vegetative covers, *E. coli*, flow regime modification, habitat alterations, and iron. The probable sources are listed as agriculture, channelization, dryland crop production, irrigated crop production, and grazing in riparian or shoreline areas, impacts of abandoned mine lands, impacts from hydrostatic flow regulation/modification, municipal point source discharge, natural sources, onsite treatment systems, and streambank modifications/destabilization. An *E. coli* TMDL has been completed for this assessment unit.

The USGS has a gaging station (06120500) on the Musselshell River located approximately 1 mile southwest of Harlowton. This gaging station has records dating back to 1956. DEQ calculates the 7-day, 10-year low flow (7Q10) at 6.64 cfs [4.3 mgd]. The seasonal (July-October) 14-day, 5-year low flow (14Q5) at the gaging station is reported at 18.7 cfs [12.1 mgd], based on 53 seasons of record. Use of the post-regulation record only is appropriate because

Bair, Martinsdale East and Martinsdale North Reservoirs (all owned by the State of Montana) were constructed in 1939 and have significantly altered flows since their construction and use. In addition, water rights-related court decisions and application of instream water rights secured by the Montana Department of Fish, Wildlife and Parks (FWP) have altered stream flows, especially low flows. The 7Q10 and the 14Q5 are representative of flow conditions in the Musselshell since construction of the dams.

Table 5 of this FS contains ambient water quality data for the Musselshell.

| Table 5: Musselshell River Ambient Water Quality Data ⁽¹⁾ | | | | | | |
|--|-------|---------|---------|---------|-----------------------------|-------------------|
| Parameter | Units | Minimum | Maximum | Average | 75 th Percentile | Number of Samples |
| Hardness, as CaCO ₃ | mg/L | 311 | 348 | 326 | 311 ⁽²⁾ | 3 |
| pH | s.u. | 7.8 | 8.5 | 8.1 | 8.2 | 22 |
| Temperature | °C | 0 | 23.4 | 10.5 | 19.3 | 39 |
| Total Ammonia as N | mg/L | < 0.05 | < 0.05 | < 0.05 | < 0.05 | 2 |
| Nitrate + Nitrite as N | mg/L | < 0.01 | 0.06 | < 0.02 | 0.05 | 4 |
| TN | mg/L | 0.22 | 0.41 | 0.31 | 0.38 | 6 |
| TP | mg/L | 0.005 | 0.080 | 0.028 | 0.040 | 6 |
| Footnotes: | | | | | | |
| 1. Less than (<) values are of the detection limit for the parameters reported as “not detected” at RRV. | | | | | | |
| 2. 25 th percentile hardness. | | | | | | |

c. Mixing Zone

A mixing zone is an area where effluent mixes with the receiving water and certain water quality standards may be exceeded. A mixing zone must be of the smallest practicable size, have a minimum effect on water uses, and have definable boundaries. No mixing zone will be granted that will impair beneficial uses. Acute standards for any parameter may not be exceeded in any portion of the mixing zone unless DEQ specifically finds that allowing minimal initial dilution will not threaten or impair existing beneficial uses.

The discharge must comply with general prohibitions requiring that state waters, including mixing zones, must be free from substances which will:

- settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter) or globules of grease or other floating materials;
- produce odors, colors, or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
- create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and

- (e) create conditions which produce undesirable aquatic life.

DEQ will determine the applicability of a mixing zone and, if applicable, its size, configuration, and location. Mixing zones are considered on a case-by-case basis. DEQ may decide to not grant a mixing zone or may decide to grant one of the four types of mixing zones, i.e. nearly-instantaneous, standard, alternative or modified, or source-specific mixing zone. Mixing zones are granted on a parameter by parameter basis only and are not granted for TBELs based on NSS, effluent guidelines or other technology-based standards.

Consideration will be given for a mixing zone on a parameter-by-parameter basis with this renewal. The nearly-instantaneous mixing zone is not appropriate because of lack of complete mixing in the receiving water at the point of discharge. A standard mixing zone has limited applicability because it also does not allow for use of dilution to comply with acute water quality standards. However, a standard mixing zone may be appropriately considered for some parameters, like total ammonia-N (for chronic aquatic life standards) and nitrate/nitrite nitrogen (for human health standards), where 25% of the 7Q10 is typically used for dilution for minor discharges with a dilution ratio of less than 100:1. A standard mixing zone is also typically considered for TN and TP, where the 14Q5 is often used for dilution. An alternative or modified mixing zone is a consideration for discharges from minor POTWs for the parameters of TRC and total ammonia-N. A source-specific mixing zone is not appropriate because of the lack of the required mixing zone study, which must be provided to DEQ by the applicant and be based on use of an approved water quality model.

d. Basis for WQBELs (Reasonable Potential and Calculations)

Permits are required to include WQBELs when TBELs are not adequate to protect water quality standards and no wastes may be discharged that can reasonably be expected to violate any standard. The need for WQBELs is determined based on reasonable potential (RP) calculations for certain pollutants to determine if numeric or narrative water quality standards may be exceeded. DEQ uses a mass balance equation (*Equation 1*) to determine reasonable potential based on the *EPA Technical Support Document for Water Quality-based Toxics Control (TSD)* and CIRCULAR DEQ-7.

$$C_{RP} = \frac{C_E Q_E + C_S Q_S}{Q_E + Q_S} \quad (\text{Equation 1})$$

Where:

- C_{RP} = receiving water concentration (RWC) after mixing, mg/L
- C_E = effluent concentration, mg/L
- C_S = RWC upstream of discharge, mg/L
- Q_S = applicable receiving water flow, mgd
- Q_E = facility design flow rate, mgd

Pollutants typically present in effluent from municipal wastewater treatment facilities that may cause or contribute to exceedances of water quality standards include conventional pollutants such as biological material (measured by BOD₅), TSS, O & G, *E. coli* and pH; and non-conventional pollutants such as TRC, ammonia, nitrate/nitrite, TN and TP.

In the reach of the Musselshell that receives the effluent discharge from the Harlowton WWTF, near river mile 305, brown trout and mountain whitefish are the salmonids listed by Montana Fisheries Information System (MFISH) as being common. Rainbow trout are listed as being incidental. Non-salmonid species listed as common in the reach are fathead chub and mountain sucker. Non-salmonid species listed as rare in the reach are fathead minnow, longnose sucker, northern redbelly dace, redbelly x finescale dace and stonecat.

Based on “Spawning Times of Montana Fishes,” Don Skaar, Montana FWP, 3/6/01, salmonid fishes (not including rainbow trout) are present in early life stages in this reach of the Musselshell from September through May. Common and rare non-salmonid fishes are present in early life stages from March through August, depending on the species. Accordingly, salmonid and non-salmonid fishes are assumed to be present in early life stages in the receiving water year-round.

1. Conventional Pollutants

TSS, BOD₅, and pH – The WWTF provides a significant reduction in biological material and solids through secondary treatment and TES (for TSS) as addressed in Section III and provides sufficient protection for pH. No additional WQBELs will be necessary for these parameters. Monthly monitoring will be required for effluent BOD₅, TSS and pH, as well as influent BOD₅ and TSS.

O & G – The 2017-issued permit has a daily maximum limit of 10 mg/L for O & G along with a biannual monitoring requirement. Effluent monitoring during the POR found a maximum level of O & G of 1 mg/L. RP does not exist to exceed the requirements the water quality standard of 10 mg/L and an effluent limit is not needed for O & G. However, monitoring for O & G will still be required twice a year.

E. coli – The 2017-issued permit had effluent limits for *E. coli* that are the water quality standards for the Musselshell River applied at the end of the pipe. The 2021 TMDL waste load allocation is also based on meeting the water quality standards.

The water quality standards for the Musselshell for *E. coli* are:

- April 1 through October 31, of each year, the geometric mean number of *E. coli* may not exceed 126 cfu/100ml and 10% of the total samples may not exceed 252 cfu/100ml during any 30-day period; and
- November 1 through March 31, of each year, the geometric mean number of *E. coli* may not exceed 630 cfu/100ml and 10% of the samples may not exceed 1,260 cfu/100ml during any 30-day period.

The final effluent limits on *E. coli* from the 2017-issued permit will be retained in the renewed permit. The monitoring frequency for *E. coli* will be maintained at once per week.

2. Non-conventional Pollutants

TRC – The 2017-issued permit has final effluent limits for TRC of 0.01 mg/L (average monthly limit) and 0.02 mg/L (maximum daily limit). The chlorination unit has been replaced by UV disinfection. This represents a major change in the operation allowing DEQ to remove the TRC limits. The proposed permit will not have limits or monitoring for TRC.

Total Ammonia-N – There are no total ammonia-N (ammonia) limits in the 2017-issued permit. Ammonia limits are developed based on standards that account for a combination of pH and temperature of the receiving stream, the presence or absence of salmonid fishes (trout, whitefish and salmon), and the presence or absence of fish in early life stages. Water quality standards for ammonia and the resultant effluent limits are determined on an annual basis.

Table 6 contains the applicable water quality standards for ammonia calculated for the Musselshell at the point of the discharge from the Harlowton WWTF. *Equation 1* was used to determine RP, using a (TSD calculated maximum) effluent ammonia level of 33.2 mg/L, 25% of the 7Q10 for chronic and 2.5% of the 7Q10 (10% of the chronic dilution) for acute, design WWTF flow and a background concentration of ammonia in the Musselshell of 0.05 mg/L (based on DEQ instream samples taken in 2015 – levels reported as < 0.05 mg/L). The calculated RP values are 5.6 mg/L for chronic and 22.1 mg/L for acute, both of which exceed water quality standards.

| Table 6: Applicable Water Quality Standards for Total Ammonia-N (NH ₃ -N plus NH ₄ -N) | | | | | | |
|--|--------|-------------------|---------------------------|----------------------------------|------------------|--|
| Condition | Period | Salmonids Present | Early Life Stages Present | Ambient Condition ⁽¹⁾ | | Water Quality Standard ⁽²⁾ (mg/L) |
| | | | | pH (s.u.) | Temperature (°C) | |
| Acute | Annual | Yes | NA | 8.2 | NA | 3.83 |
| Chronic | Annual | NA | Yes | 8.2 | 19.3 | 1.28 |
| NA = Not Applicable Footnotes: 1. Based on 75 th percentile of pH & temperature values. 2. Based on DEQ-7. | | | | | | |

Harlowton's WWTF springtime ammonia peak concentrations have doubled in 2021 and 2022 compared to previous years following the retirement of the wastewater treatment operator. At these times, flow was seven times higher than the 7Q10 and the ammonia concentrations following mixing would have been greatly reduced in the river. Because operational issues may be behind the sudden doubling of ammonia concentrations, DEQ will not include ammonia limits that would lead to unnecessary upgrades to Harlowton's WWTF. However, DEQ will include conditions in the permit requiring an evaluation of operational practices that may have led to higher levels of ammonia and implementation of improved procedures.

Nitrate plus Nitrite Nitrogen (NO₃/NO₂) – The human health water quality standard for NO₃/NO₂ in waters to be maintained suitable for drinking is 10 mg/L.

Table 2 shows that for the POR, effluent NO_3/NO_2 levels have a maximum level of 9.08 mg/L. Based on a calculated CV of 0.6, the TSD Table 3-2 multiplier is 1.0. Applying the multiplier to the maximum reported value, the calculated maximum effluent NO_3/NO_2 concentration is 9.08 mg/L. RP does not exist with NO_3/NO_2 levels this low, i.e. below the water quality standard. It should be noted however, that providing the level of nitrification needed to meet future effluent limits on ammonia, may result in relatively high levels of NO_3/NO_2 in the effluent. The permittee may need to balance future WWTF operation to avoid discharging excessively high levels of NO_3/NO_2 while reducing effluent levels of ammonia.

No effluent limits on NO_3/NO_2 will be applied to the discharge from the Harlowton WWTF during this renewal cycle. However, monitoring requirements for NO_3/NO_2 will be continued in the renewed permit.

Nutrients (TN and TP) –

With a summer dilution ratio of 55, the Harlowton WWTP discharge is small compared to the flow of the Musselshell River. The EPA considers federal standards consisting of a TN of 1.3 mg/L and TP of 0.15 mg/L applicable to Musselshell River by Harlowton. DEQ evaluated the Harlowton WWTF for RP under the federal TN and TP values.

Total Nitrogen - The maximum effluent concentration of TN reported from the Harlowton WWTF was 13.6 mg/L. Based on a CV of 0.6, the TSD Table 3-2 multiplier is 1.01. Applying the multiplier to the maximum reported value, the calculated maximum June through September effluent TN concentration is 13.8 mg/L. *Equation 1* was used to determine RP, using a TSD calculated maximum effluent TN level of 13.8 mg/L; 12.1 mgd (14Q5); design WWTP flow (0.22 mgd); and a background level of TN in the Musselshell River of 0.38 mg/L.

The calculated RP value is 0.6 mg/L, which does not exceed the federal water quality standards. Therefore, RP does not exist to exceed the federal numeric water quality standards for TN in the Musselshell River.

Total Phosphorus - The maximum effluent concentration of TP reported from the Harlowton WWTF was 3.0 mg/L. Based on a CV of 0.6, the TSD Table 3-2 multiplier is 1.54. Applying the multiplier to the maximum reported value, the calculated maximum June through September effluent TP concentration is 4.6 mg/L. *Equation 1* was used to determine RP, using a TSD calculated maximum effluent TN level of 4.6 mg/L; 12.1 mgd (14Q5); design WWTP flow (0.22 mgd); and a background level of TN in the Musselshell River of 0.04 mg/L.

The calculated RP value is 0.12 mg/L, which is below the federal water quality standards. Therefore, RP does not exist to exceed the federal numeric water quality standards for TP in the Musselshell River.

Harlowton will be required to continue to monitor for TN and TP in the renewed permit.

V. Final Effluent Limits

Final limits for Outfall 001 in Table 7 are effective upon the renewal date of the permit.

| Table 7: Final Effluent Limits | | | | |
|--|-----------|--------------------------------------|-----------------------------------|---------------------|
| Parameter | Units | Average Monthly Limit ¹ | Average Weekly Limit ¹ | Maximum Daily Limit |
| Biochemical Oxygen Demand (BOD ₅) | mg/L | 30 | 45 | -- |
| | lbs/day | 55.0 | 82.6 | -- |
| BOD ₅ , Removal | % | 85 | -- | -- |
| Total Suspended Solids (TSS) | mg/L | 45 | 65 | -- |
| | lbs/day | 82.6 | 119.3 | -- |
| TSS, Removal | % | 65 | | |
| <i>Escherichia coli</i> (<i>E. coli</i>) ^{2, 4} | cfu/100ml | 126 | 252 | -- |
| <i>Escherichia coli</i> (<i>E. coli</i>) ^{3, 4} | cfu/100ml | 630 | 1,260 | -- |
| pH | s.u. | 6.0-9.0 (instantaneous) ⁵ | | |
| Footnotes: | | | | |
| 1 See Definition section at end of permit for explanation of terms. | | | | |
| 2. This limitation applies from April 1 through October 31. | | | | |
| 3. This limitation applies from November 1 through March 31. | | | | |
| 4. Report Geometric Mean if more than one sample is collected in the reporting period. | | | | |
| 5. For compliance purposes, any single analysis and/or measurement beyond this limit shall be considered a violation of the conditions of this permit. | | | | |

VII. Self-Monitoring & Other Requirements

a. Self-Monitoring

Effluent samples for all parameters must be obtained immediately after treated wastewater flows over the outlet V-notch weir.

Influent samples for BOD₅ and TSS are to be taken from the lift station wet well.

| Table 8: Monitoring Requirements | | | | | | |
|--|------------------------|-----------------|------------------|----------------------------------|--------------------------|-----------------|
| Parameter | Unit | Sample Location | Sample Frequency | Sample | Sample Type ¹ | ML ⁷ |
| Flow | mgd | Effluent | 1/Week | Maximum Daily Monthly Average | Instantaneous | 0.001 |
| Biochemical Oxygen Demand (BOD ₅) | mg/L | Influent | 1/Month | Monthly Average | Composite | 10 |
| | mg/L | Effluent | 1/Month | Monthly Average | Grab | 2 |
| | lbs/day | Effluent | 1/Month | Monthly Average | Calculated | 0.1 |
| | % Removal ² | NA | 1/Month | Monthly Average | Calculated | 0.1 |
| Total Suspended Solids (TSS) | mg/L | Influent | 1/Month | Monthly Average | Composite | 10 |
| | mg/L | Effluent | 1/Month | Monthly Average | Grab | 10 |
| | lbs/day | Effluent | 1/Month | Monthly Average | Calculated | 0.1 |
| | % Removal ² | NA | 1/Month | Monthly Average | Calculated | 1 |
| pH | s.u. | Effluent | 1/Month | Daily Minimum Daily Maximum | Instantaneous | 0.1 |
| <i>Escherichia coli</i> ³ | cfu/100ml | Effluent | 1/Week | Monthly Average | Grab | 1 |
| Oil and Grease ⁵ | mg/L | Effluent | 2/Year | Monthly Average | Grab | 0.1 |
| Total Ammonia as N | mg/L | Effluent | 1/Month | Monthly Average | Grab | 0.07 |
| Nitrate + Nitrite as N | mg/L | Effluent | 1/Month | Monthly Average | Grab | 0.02 |
| Total Kjeldahl Nitrogen as N ⁶ | mg/L | Effluent | 1/Month | Monthly Average | Grab | 0.5 |
| Total Nitrogen as N ⁶ | mg/L | Effluent | 1/Month | Monthly Average | Calculated | 0.1 |
| | lbs/day | Effluent | 1/Month | Monthly Average | Calculated | 0.1 |
| Total Phosphorus as P ⁶ | mg/L | Effluent | 1/Month | Monthly Average | Grab | 0.003 |
| | lbs/day | Effluent | 1/Month | Monthly Average | Calculated | 0.01 |
| Footnotes: 1. See Definition section at end of permit for explanation of terms. 2. See narrative discussion in Part I of permit for additional details. 3. Report geometric mean if more than one sample taken during the reporting period. 4. The Permittee is only required to sample for TRC if chlorine is used as a disinfectant in the treatment process. If chlorine is <i>not</i> used, write "NA" on the DMR for this parameter. 5. Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent. 6. Monitoring for TN and TP required July 1 through September 30. TN is calculated as the sum of nitrate + nitrite (as N) plus total kjeldahl nitrogen (as N) concentrations. 7. ML is the minimum detection level. Analyses for all parameters must be to the ML listed in the permit for the parameter. | | | | | | |

b. Sludge Requirements

This permit will contain standard conditions requiring compliance with 40 CFR 503 for any removal or disposal of biosolids from the Harlowton WWTF.

c. Pretreatment Program

The permit will include standard language restricting introducing certain pollutants to the Harlowton WWTF and requiring the facility to provide adequate notice to DEQ if a new source, volume or character of industrial pollutant is introduced to the system.

VIII. Nonsignificance Determination

The discharge does not constitute a new or increased source of pollutants pursuant. Therefore, a nonsignificance analysis is not required for the Harlowton WWTP.

IX. Information Sources

- a. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387,
- b. US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.
- c. Montana Code Annotated (MCA), Title 75-5-101, *et seq.*, “Montana Water Quality Act,”
- d. Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
 - Subchapter 2 - Water Quality Permit and Application Fees.
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